## REMARKS

Claims 1 to 26 are pending in this application. Claims 1-17 are rejected. Claims 1, 11 and 14 are amended herein. Claims 5 and 10 are canceled. Claims 18-26 remain withdrawn from consideration.

### The Objection to Claim 1

Claim 1 was objected to for improper indication of material added by amendment, i.e., the added limitation ("wherein the graphite shaft and the graphite platform form a single unitary body") was not underlined in the previously submitted Amendment. This informality is corrected by amendment herein.

### The Rejections under Prior Art

1. Claims 1-5, 7-9 and 11 are rejected under 35 U.S.C. §103(a) as being obvious over Masuda et al. (US Pub. No. 2003/0107865). Masuda et al. is directed to a wafer handling apparatus and a method for manufacturing the apparatus.

Claim 1 is amended herein to substantially incorporate the recitations of claim 5, i.e., that the graphite shaft is a rod with a hollow core. Accordingly, claim 5 is canceled herein. Masuda et al. does not disclose or suggest a graphite shaft having a hollow core. With respect to claim 5 the Office Action states: "Masuda discloses the graphite shaft is one of a rod and a hollow core (Fig. 4 Item 11)." However, Masuda et al. only characterizes item 4 as an electrode. (Page 5, paragraph [0062]). Fig. 4 of Masuda et al. does not depict item 11 as having a hollow core, nor

does Masuda et al. anywhere in the specification disclose or suggest that item 11 has a hollow core. Accordingly, claim 1 and all claims depending therefrom are allowable over the Masuda et al. reference. Reconsideration and withdrawal of the rejection are respectfully requested.

2. Claims 1-5, and 7-10 are rejected under 35 U.S.C. §103(a) as being obvious over Honma et al. (US Pat. No. 5,748,436) in view of Flanigan et al. (US Pat. No. 6,081,414) and MacLeish et al. (US Pat. No. 6,113,984). Honma et al is directed to a ceramic electrostatic chuck and method for electrostatically clamping a semiconductor wafer to the chuck. Flanigan et al. is directed yo an apparatus for improved biasing and retaining of a workpiece such as a semiconductor wafer. MacLeish et al. is directed to a gas injection system for CVD reactors.

As discussed above, claim 1 is amended to additionally include the recitations of claim 5, which substantially recite that the graphite shaft is a rod with a hollow core. Regarding claim 5, the Office Action states: "MacLeish et al. teach that shaft 116 is of rod form (Fig. 14 and column 13, line 56 to column 14, line 5)." MacLeish et al. states at column 13, lines 57-59:

> A graphite support which includes a shaft 116 connected to three arms 118 is provided to position and rotate susceptor 115. A susceptor 115 preferably made of graphite is mounted onto arms 118 and supports a wafer 120.

Accordingly, MacLeish et al. does not disclose or suggest that shaft 116 has a hollow core and does not support a rejection of claim reciting the features of a "rod with a hollow core" for the graphite shaft.

The Office Action states that Honma et al. and Flanigan et al. do not teach a shaft comprised of graphite and wherein the graphite shaft and the graphite platform form a single unitary body. However, the Office Action cites MacLeish et al. as follows:

> MacLeish et al. teach an apparatus (Figure 19) that includes a support (platform) 115 with upper and lower flat surfaces and a shaft 116 that extends transverse to the platform. Mac Leish et al. further teach that the suport 1156 and shaft 116 are made from graphite (column 13, lines 45-60). Though MacLeish et al. do not explicitly teach that the graphite shaft 116 (with arms 118) and susceptor 115 (platform) form a single unitary body, it is known in the art to integrate individual parts (especially when made from the same material), as a single unitary part to obtain easier alignment between shaft and the platform, and also depending upon the complexity of the relevant parts and economies of scale.

Applicants respectfully submit that MacLeish et al. does not cure the deficiencies of Honma et al. and Flanigan et al. Honma et al. does not disclose a shaft. Flanigan does not disclose unitary construction of a graphite shaft and a graphite substrate. Rather, Flanigan et al. describes pedestal base 106 as being fabricated from nickel or a metal alloy and the electrostatic chuck 105 as being fabricated from a dielectric material. MacLeish et al. describes a graphite support including a shaft 116 and arms 118. The susceptor 115 is not disclosed as being a part of the graphite support. Rather, susceptor 115 is disclosed as being "mounted onto arms 118", which indicates that susceptor 115 is <u>not</u> of single piece construction with the graphite support.

The Office Action argues that one would be motivated to fabricate the MacLeish apparatus as a single piece "to obtain easier alignment between shaft and the platform, and also depending upon the complexity of the relevant parts and economies of scale." However, no explanation is given as to how alignment is any easier in fabricating a single piece as opposed to

joining two pieces nor is any evidence provided how "economies of scale" would motivate one skilled in the art to fabricate the MacLeish apparatus as a single piece. To the contrary, the complexity of the parts of the MacLeish et al. apparatus militates against such single piece construction. In MacLeish et al. there are three different components with different functionality which, when combined, have different respective purposes. There is no explanation in the Office as to how exactly one would integrally fabricate as a single piece of graphite the three open arms 118, the shaft 116 and the susceptor 115.

Pursuant to MPEP 2143, to establish a *prima facie* case for obviousness three criteria must be met:

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.

Second, there must be a reasonable expectation of success.

Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure

In the present instance, even if the references were to be combined they would not teach or suggest all of the claim limitations; and there is no evidence provided as to how the MacLeish et al. apparatus can be successfully manufactured as a single piece. Accordingly, claim 1 and all claims depending therefrom are submitted to be allowable over Honma et al. in view of Flanigan

et al. and MacLeish et al. Reconsideration and withdrawal of the rejection are respectfully requested.

3. Claim 6 is rejected under 35 U.S.C. §103(a) as being obvious over Honma, Flanigan et al. and MacLeish et al. and further in view of Chu et al. (US Pat. No. 6,793,767).

Claim 6 depends from claim 1 which is submitted to be allowable for the reasons stated above. Accordingly, claim 6 is also submitted to be allowable. Reconsideration and withdrawal of the rejection are respectfully requested.

4. Claims 11, 12, 15, and 16 are rejected under 35 U.S.C. §103(a) as being obvious over Honma et al., Flanigan et al. and MacLeish et al., and further in view of Komino et al. (US Pat. No. 5,478,429). Komino et al. is directed to a plasma process apparatus.

Claim 11 is amended herein to recite that the two conductors are each in contact with and surrounded by dielectric material. See, e.g., Figs. 3 and 4 of the drawings and the specification at paragraphs [029]-[030] and [040]-[044]. Komino et al. discloses a power line 62 disposed within outer conductive pipe 52. However, neither of these conductors is in contact with and surrounded by a dielectric material. Accordingly, Even if Komino et al. were to be combined with Honma et al., Flanigan et al. and MacLeish et al. as suggested by the Examiner, Applicants' invention as claimed would not be disclosed or suggested. Reconsideration and withdrawal of the rejection are respectfully requested.

5. Claim 13 is rejected under 35 U.S.C. §103(a) as being obvious over Honma et al., Flanigan et al., MacLeish et al. and Komino et al., and further in view of Parkhe et al. (US Pat. No. 6,535,372).

Parke et al discloses an apparatus having two conductors 118 extending inside a shaft (not numbered) and connected to electrodes 116. Claim 13 is amended to further recite that the conductors are disposed on an exterior surface of the graphite shaft. See, e.g., Fig. 3 of the drawings. Claim 13 is allowable for at least the following reasons. First, claim 13 depends ultimately from independent claim 1, which is submitted to be allowable for the reasons stated above. Secondly, claim 13 depends from claim 11 which recites, *inter alia*, that each conductor is surrounded by and in contact with dielectric material. Third, claim 13 recites that the conductors are disposed on an exterior surface of the graphite shaft. Parkhe et al. does not cure the deficiencies of Honma et al., Flanigan et al., MacLeish et al. and Komino et al., and does not disclose or suggest conductors surrounded by and in contact with dielectric material disposed along the exterior surface of the graphite shaft. Accordingly, claim 13 is submitted to be allowable over the cited prior art. Reconsideration and withdrawal of the rejection are respectfully requested.

6. Claim 14 is rejected under 35 U.S.C. §103(a) as being obvious over Honma et al., Flanigan et al., MacLeish et al., Komino et al., and Parkhe et al., and further in view of Kirchner et al. (US Pat. No. 5,811,820). Claim 14 is placed into independent form and incorporates the recitations of claim 1 except that the graphite shaft does not have a hollow core. Claim 14 is also

amended to recite that the two electrical conductors are coated layers of pyrolytic graphite symmetrically disposed on opposite sides of the graphite shaft wherein the two electrical conductors each extend lengthwise along the graphite shaft and are integral therewith. The recitation of the graphite shaft being solid is deleted. In contrast to this, Kirchner et al. discloses that the electrode layers 2206 and 2208 are metal strips or rings. These conductors are not disclosed as being of pyrolytic graphite and are not integral with the shaft. Claim 14 is further distinguished over Kirchner et al. By additionally reciting that both conductors extend lengthwise along the graphite shaft. Kirchner et al. clearly teaches that the conductors 2208 are rings, which extend circumferentially around shaft 2202. The metal strips 2206 are inside the metal rings 2208. Accordingly, the two conductors 2206 and 2208 are not disposed on opposite sides of the shaft 2202. In view of these recitations it is respectfully submitted that claim 14 is allowable over the cited prior art. Reconsideration and withdrawal of the rejection are respectfully requested.

7. Claim 17 is rejected as being obvious over Honma et al., Flanigan et al., MacLeish et al. and Komino et al., and further in view of Kushihashi (US Pub. No. 2003/0217767).

Claim 17 depends from claim 11, which is submitted to be allowable for the reasons stated above. Moreover Kushihashi et al. is directed to a thermocouple protective tube, not a wafer processing device, and is not in the same technical field so as to suggest the combination of its teachings with those of the other cited references. Referring to Fig. 2 of Kushihashi et al., item 9 is identified as a thermocouple wire, not a graphite rod. (Paragraph [0005]). In an

embodiment, the Kushihasi et al. apparatus is made by depositing pyrolytic boron nitride on a graphite susceptor to form a cylinder shaped body. Then, a heat absorbing layer is deposited on the cylindrical boron nitride body. The heat absorbing layer can be pyrolytic carbon, carbon-containing pyrolytic boron nitride, silicon nitride, silicon carbide or aluminum nitride. (Paragraph [0046]). The heat absorbing layer is not disclosed as functioning as a conductor. To the contrary, the Kushihashi et al. device serves only as a protective sheath. As can be seen from Example 1, paragraphs [0050] and [0051], the thermocouple assembly further includes a thermocouple wire, insulated with magnesia, which is sealed inside the sheath.

Claim 17 depends from claim 11, which recites in relevant part as follows:

> the graphite shaft further includes at least two electrical conductors for connecting the electrode to an external source of power, each electrical conductor being in contact with, and surrounded by, dielectric material.

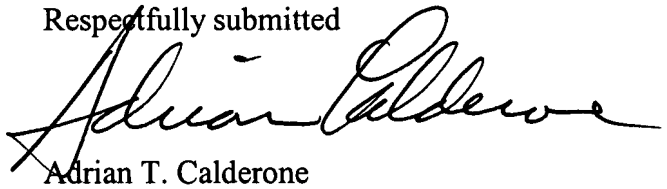
Kushihashi et al. clearly does not disclose conductors comprising a graphite rod and a hollow graphite rod separated by a coating layer of the materials specified in claim 17, wherein each conductor is connected to an external source of power and is surrounded by and in contact with dielectric material. More specifically, the Kushihashi et al. thermocouple wire is what would be connected to an external source of power. The graphite susceptor serves as a support for the pyrolytic boron nitride sheath, but is not disclosed as being connected to any source of power. The external coating of pyrolitic carbon is disclosed as being a heat absorbing layer, but is likewise not disclosed as being a conductor connected to any source of power. In view of these differences. Kushihashi et al. does not support the rejection of claim 17 and adds nothing to

Honma et al., Flanigan et al., MacLeish et al. and Komino et al. which would cure their deficiences. Accordingly, Claim 17 is submitted to be allowable over the cited prior art. Reconsideration and withdrawal of the rejection are respectfully requested.

## CONCLUSION

For at least the reasons stated above all of the pending claims are submitted to be in condition for allowance, the same being respectfully requested.

Respectfully submitted



Adrian T. Calderone
Reg. No. 31,746
Attorney for Applicant(s)

DILWORTH & BARRESE, LLP
333 Earle Ovington Blvd.
Uniondale, NY 11553
Tel: (516) 228-8484
Fax: (516) 228-8516